

AMENDMENTS TO THE CLAIMS

1. (withdrawn) A method for implementing a temperature cycling operation for a biochemical sample to be reacted, the method comprising:

applying an infrared (IR) heating source to the sample at a first infrared wavelength selected so as to generate a first desired temperature for a first duration and produce a first desired reaction within the sample; and

following said first desired reaction, applying said infrared (IR) heating source to the sample at a second infrared wavelength selected so as to generate a second desired temperature for a second duration and produce a second desired reaction within the sample.

2. (withdrawn) The method of claim 1, further comprising:

following said second desired reaction, applying said infrared (IR) heating source to the sample at a third infrared wavelength selected so as to generate a third desired temperature for a third duration and produce a third desired reaction within the sample.

3. (withdrawn) The method of claim 2, wherein the sample is placed within a reaction chamber during the application of each of said infrared (IR) heating source at each of said first, said second and said third wavelengths.

4. (withdrawn) The method of claim 2, further comprising:

passing the sample through a first chamber, said first chamber having said first infrared wavelength generated therein;

passing the sample through a second chamber, said second chamber having said second infrared wavelength generated therein; and

passing the sample through a third chamber, said third chamber having said third infrared wavelength generated therein.

5. (withdrawn) The method of claim 4, wherein the sample is passed through said first second and third chambers by a conveyor.

6. (withdrawn) A method for implementing temperature cycling a for a polymerase chain reaction (PCR) process, the method comprising:

subjecting a DNA fragment to infrared radiation so as to facilitate at least one of a denaturing step, an annealing step and an extending step.

7. (withdrawn) The method of claim 6, further comprising:

inserting the DNA fragment into an infrared (IR) reaction chamber; activating an infrared (IR) heating source within said reaction chamber at a first infrared wavelength selected so as to generate within said DNA fragment a first temperature for a first duration until said denaturing step is completed;

following said denaturing step, activating said infrared (IR) heating source at a second infrared wavelength selected so as to generate within said DNA fragment a second temperature for a second duration until said annealing step is completed; and

following said annealing step, activating said infrared (IR) heating source at a third infrared wavelength selected so as to generate within said DNA fragment a third temperature for a third duration until said extending step is completed.

8. (withdrawn) The method of claim 7, wherein an interior of said reaction chamber is initially maintained at an ambient temperature.

9. (withdrawn) The method of claim 6, further comprising:

inserting the DNA fragment into an infrared (IR) reaction chamber, an interior of said reaction chamber being maintained at an annealing temperature corresponding to said annealing step;

activating an infrared (IR) heating source within said reaction chamber at a

first infrared wavelength selected so as to generate within said DNA fragment a denaturing temperature for a first duration until said denaturing step is completed;

following said denaturing step, deactivating said infrared (IR) heating source so as to generate within said DNA fragment said annealing temperature for a second duration until said annealing step is completed; and

following said annealing step, activating said infrared (IR) heating source at a second infrared wavelength selected so as to generate within said DNA fragment an extending temperature for a third duration until said extending step is completed.

10. (withdrawn) The method of claim 6, further comprising:

passing the sample through a first chamber containing a first infrared (IR) heating source therein, and activating said first infrared (IR) heating source at a first infrared wavelength so as to generate within said DNA fragment a first temperature for a first duration until said denaturing step is completed;

following said denaturing step, passing the sample through a second chamber containing a second infrared (IR) heating source therein, and activating said second infrared (IR) heating source at a second infrared wavelength so as to generate within said DNA fragment a second temperature for a second duration until said annealing step is completed; and

following said annealing step, passing the sample through a third chamber containing a third infrared (IR) heating source therein, and activating said third infrared (IR) heating source at a third infrared wavelength selected so as to generate within said DNA fragment a third temperature for a third duration until said extending step is completed.

11. (withdrawn) The method of claim 4, wherein said DNA fragment is passed through said first second and third chambers by a conveyor.

12. (currently amended) A temperature cycling apparatus, comprising:

a processing chamber;

an infrared (IR) heating source, said infrared heating source configured to generate energy at a first infrared wavelength so as to generate a first desired temperature for a first duration and produce a first desired reaction within a sample placed in said processing chamber; and

said infrared (IR) heating source is further configured to generate energy at a second infrared wavelength so as to generate a second desired temperature for a second duration and produce a second desired reaction within the sample; and

wherein said first and second wavelengths generated by said IR source are selected to be coincident with corresponding absorptive wavelengths of the sample so as to heat the sample without directly heating a medium containing the sample.

13. (currently amended) The temperature cycling apparatus of claim 12,

wherein said infrared (IR) heating source further is configured to generate energy at a third infrared wavelength so as to generate a third desired temperature for a third duration and produce a third desired reaction within the sample, wherein said third wavelength generated by said IR source is selected to be coincident with a corresponding absorptive wavelength of the sample so as to heat the sample without directly heating the medium containing the sample.

14. (original) The temperature cycling apparatus of claim 13, wherein:

    said first desired temperature corresponds to a denaturing step for a polymerase chain reaction (PCR) process;

    said second desired temperature corresponds to an annealing step for said PCR process; and

    said third desired temperature corresponds to an extending step for said PCR process.

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15. (original) The temperature cycling apparatus of claim 14, wherein:

    said processing chamber further comprises a first chamber configured for generating said first infrared wavelength, a second chamber configured for generating said second infrared wavelength, and a third chamber configured for generating said third infrared wavelength.

16. (original) The temperature cycling apparatus of claim 15, further comprising a conveyor for passing the sample through said first, second and third chambers.